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A BRANCH-LEVEL MANAGEMENT PROGRAM FOR ASSESSING BRANCH STATUS O--ETC(U)
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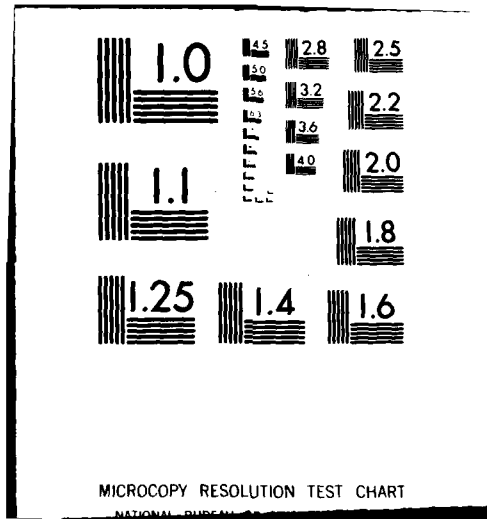
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A Branch-Level Management Program for
Assessing Branch Status on Projected Surplus/Deficit
and Personnel Utilization

1. Introduction

Reference 1 describes a time-share computer program used by the Search Radar Branch, Radar Division, to monitor individual projects. That program, written in Fortran for the DEC-10 computer at NRL, is called `MANAGE.FOR` and it provides an extrapolation of project spending based on specified personnel, major procurements and other routine expenditures. Its principal output is an estimate of final surplus/deficit at the end of the fiscal year.

The purpose of the time-share computer program described in this report, called `BRANCH.FOR`, is to collect the results of the individual runs of `MANAGE.FOR` from each project and provide an overall Branch summary of:

- (1) whether the available funds will cover the Branch manpower funding requirements for the remainder of the fiscal year
- (2) whether the personnel are fully assigned
- (3) whether there is a projected net surplus or deficit for the end of the fiscal year, including labor and overhead, planned major procurements and expected other routine charges.

2. Review of Output Format of the Program `MANAGE.FOR`

Although discussed in Reference 1, the output format of `MANAGE.FOR` is briefly reviewed here for completeness. An example is shown in Fig. 1 for a specific project numbered 0646. Program milestones are first printed and then the operator enters the month and day (3,30) when the computer run was made. After that, the operator enters expenditures, obligations and encumbrances to date* and an amount called "EXTRA" which covers the average expected monthly expenditure in the future for routine items such as travel and minor procurements.

After the above sequence, the program asks the operator if the run is only to update Branch summary data (in the program `BRANCH.FOR`) or if further output data is to be printed in the current run. In this run, the operator answered the question `UPDATE ONLY?` with a 0 (for NO). The subsequent graph shows a plot of actual expenditures, obligations and encumbrances up to the

* Obtained from Job Order Status Reports (JOSR's distributed by the NRL Budget Office.

.EX MANAGE.FOR.R0646.FOR
 LINK: LOADING
 CLNKXCT MANAGE EXECUTION1

LIST OF MILESTONES? YES=1.NO=0
 1

1. INSTALL KA-BAND HORN ON ARM FOR WIDE ANGLE SINGLE-BEAM MEASUREMENTS (4/30/80)
2. PERFORM KA-BAND MEASUREMENTS AS REQUIRED (MAY-SEPT.1980)
3. RECEIVE A 94 GHZ RADAR & PLACE IN OPERATION (5/30/80)
4. PERFORM 94 GHZ MEASUREMENTS AS REQUESTED (JUNE-SEPT.1980)

INPUT:PRESENT DATE--M.D
 3.30

INPUT:EXPEND.OBLIG..ENCUMB..EXTRA
 8717.0.0.100

UPDATE ONLY? YES=1.NO=0
 0

GRAPH? YES=1.NO=0
 1

◆=BUDGET FUNDING: . =PLANNED SPENDING
 +=AVAILABLE FUNDS: 0=EXPEND. * COMMIT.

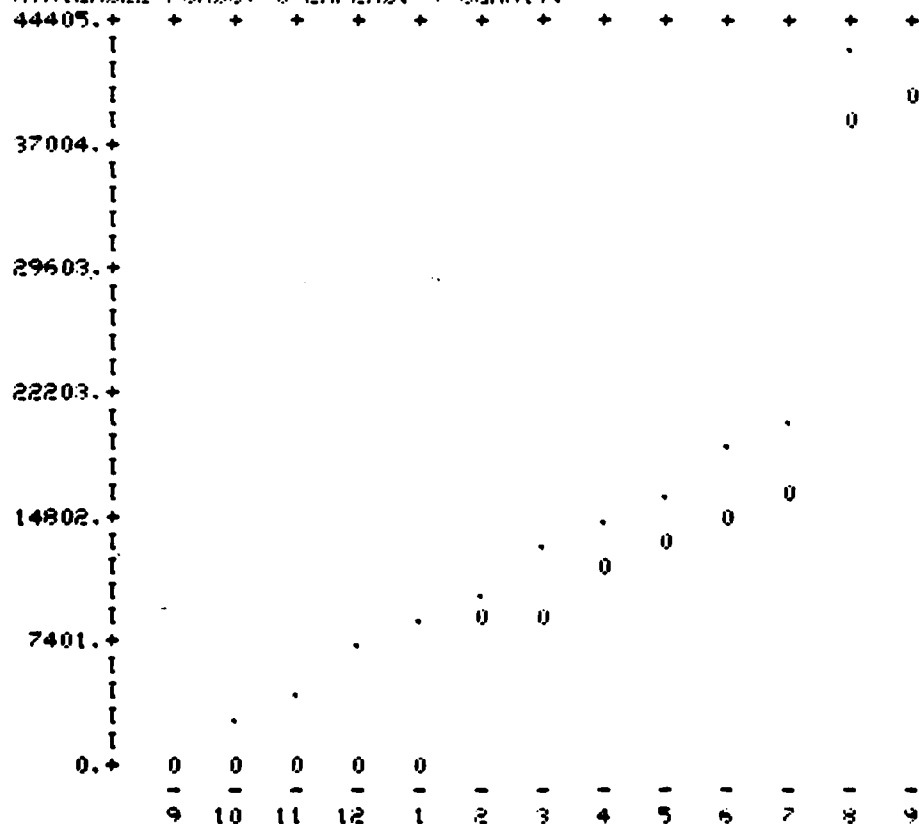


Fig. 1 — Sample output format of the program MANAGE.FOR as run for project 0646

LIST OF MAJOR PROCUREMENTS? YES=1,NO=0
1

1. 94-GHZ MAGNETRON (8.30.80)--\$20K

PROJECT STAFF? YES=1,NO=0
1

LICITRA(.12)+J.WARD(.15)+P.WARD(.05)

LIST OF NUMERICAL VALUES ON GRAPH? YES=1,NO=0
1

MD.	•	.	+	0	BAL(+--0)
9	44405.	0.	44405.	0.	44405.
10	44405.	2034.	44405.	0.	44405.
11	44405.	4068.	44405.	0.	44405.
12	44405.	6101.	44405.	0.	44405.
1	44405.	8135.	44405.	0.	44405.
2	44405.	10169.	44405.	8599.	35806.
3	44405.	12203.	44405.	8717.	35688.
4	44405.	14236.	44405.	10448.	33957.
5	44405.	16270.	44405.	12178.	32227.
6	44405.	18304.	44405.	13909.	30496.
7	44405.	20338.	44405.	15639.	28766.
8	44405.	42371.	44405.	37370.	7035.
9	44405.	44405.	44405.	39100.	5305.

END OF EXECUTION
CPU TIME: 13.73 ELAPSED TIME: 4:40.38
EXIT

Fig. 1(Continued) -- Sample output format of the program MANAGE.FOR
as run for project 0646

run date, and predicted expenditures thereafter (curve made up of the symbol "O"). The prediction includes true labor rates actually charged for the GS levels of personnel assigned to the project.

Next on the output format is a list of major procurements, with name of expected expenditure, date and amount. This is followed by a listing of assigned personnel with fraction of time on the job. The final table is a listing of the plotted values on the graph, with the right-hand BAL (balance) column being the difference between expected available funds (+ curve) and predicted expenditures (O-curve). The final number in the lower right-hand corner of this table is the projected surplus (if positive) or deficit (if negative) for this particular project. This number is stored in a file called SUR.DAT as a vector $S(I)$, where I is a job number assigned to this project 0646. In addition to this storage in the SUR.DAT file, the assigned manpower (fraction of time) is stored in a file TIME.DAT in the form of a matrix $T(I,J)$, where I is an identification number assigned to each person and J is a project number.

3. Sample Output of Program BRANCH.FOR

A sample output from a run of BRANCH.FOR is shown in Fig. 2. The program first asks for the BALANCE remaining for the Branch as a whole (taken from Job Order Status Reports supplied by the NRL budget office). The program then asks for the number of months remaining in the fiscal year (in this case, 6). The program then computes the absolute minimum amount needed to cover staff manpower alone. This is done by using salary data stored in a file called PSAL.DAT via a vector $PS(I)$, where I is a personnel identification number. This salary data is weighted by a vector $W(I)$, where I is again a personnel identification number. $W(I)$ is a weight between 0 and 1 representing availability of a particular person for the remainder of the fiscal year. For example, if a man is temporarily assigned outside of the Branch (e.g., as an NSAP representative), his weight would be 0. The next item printed, called SURPLUS, is the excess of the current balance over the amount needed for the staff. Note that procurements, travel, etc. have not yet been taken into account although overhead charges have been included.

The next listing in the output, labeled "MAN FRACT," gives the identification number of an individual and the total fraction of time he has been assigned to all jobs. In some cases, a man may work part-time and a fraction less than 1 is normal for him; in other cases, a low fraction indicates that he has not been fully assigned. Following the table, the SUM of all fractions is given (23.37 in this run). The indicated discrepancy implies that all of the manpower in the Branch has not been fully accounted for in the individual project runs by MANAGE.FOR. Specifically, the funding must actually cover 24.95 man years plus any personnel being funded outside the Branch who have not been accounted for by an identification number. Any projected surplus (estimated later in the run) should be decreased by the cost of such personnel unaccounted for.

The subsequent table in Fig. 2 is a breakdown of the staff's assigned time, by both personnel identification numbers and job numbers (note that a man may be assigned to several projects).

ED: BRANCH.FOR
 LINK: LOADING
 DIRECT BRANCH EXECUTION

INPUT: BALANCE
 1148900

INPUT: NO. OF MONTHS REMAINING
 6

CURRENT BALANCE= 1148900.

AMT. NEEDED FOR STAFF= 859185.

SURPLUS= 289715.

MAN	FRACT.									
1	2	3	4	5	6	7	8	9	10	
.66	.00	.78	1.00	.00	.35	1.00	.67	.38	.99	
11	12	13	14	15	16	17	18	19	20	
1.00	1.00	.89	.00	.00	1.00	1.00	.31	1.00	1.00	
21	22	23	24	25	26	27	28	29	30	
1.12	1.02	.99	1.00	.00	.00	.66	1.00	.75	.49	
31	32	33	34	35	36	37	38	39	40	
.93	.56	1.05	.77	.00	.00	.00	.00	.00	.00	

SUM= 23.37 SUM SHOULD BE= 24.95 PLUS PERSONNEL OUTSIDE BRANCH

PRINT BREAKDOWN? YES=1.NO=0

1

MAN	JOB	FRACT.
1	9	.44
1	11	.22
3	13	.78
4	4	1.00
6	1	.13
6	11	.22
7	2	.49
7	9	.38
7	11	.13

Fig. 2 - Sample output format of program BRANCH.FOR

8	5	.11
8	9	.11
8	11	.27
8	13	.18
9	13	.38
10	4	.84
10	7	.04
10	10	.11
11	2	.51
11	9	.42
11	11	.07
12	1	.11
12	9	.89
13	3	.20
13	5	.11
13	9	.18
13	13	.40
16	4	.56
16	7	.11
16	10	.33
17	1	.44
17	11	.56
18	6	.27
18	9	.04
19	11	.49
19	13	.51
20	1	.07
20	4	.09
20	6	.13
20	9	.33
20	11	.38
21	4	.44
21	6	.07
21	10	.33
21	11	.16
21	12	.12
22	3	.20
22	8	.13
22	11	.69
23	4	.84
23	7	.04
23	10	.11
24	9	.69
24	11	.18
24	13	.13
27	8	.04
27	11	.62
28	2	.51
28	11	.49
29	4	.09
29	9	.44
29	11	.22
30	11	.27
30	13	.22
31	2	.49
31	11	.44

Fig. 2(Continued) — Sample output format of program BRANCH.FOR

32	11	.51
32	12	.05
33	3	.44
33	11	.33
33	12	.15
33	13	.13
34	4	.11
34	7	.22
34	9	.11
34	10	.33

SURPLUS LIST? YES=1,NO=0

1

JOB SURPLUS

1	2	3	4	5
-26662.	10417.	5013.	-20268.	5213.
6	7	8	9	10
79322.	5752.	2206.	-18996.	23103.
11	12	13	14	15
-51088.	5305.	-6612.	0.	0.
16	17	18	19	20
0.	0.	0.	0.	0.

SUM= 12705.

STAFF ID LIST? YES=1,NO=0

1

1. ADAMS. 2. TITUS. 3. BARRY. 4. BORCHARDT 5. BRINSON
 6. J.L.WARD. 7. CRISLER. 8. CROSS. 9. HSIAD 10. GOIT
 11. HATLEY. 12. HARPER. 13. HOWARD 14. XXXXXX. 15. XXXXXX
 16. LINDE. 17. LIPKA 18. MARINDS. 19. MAYS. 20. MEADS
 21. MEIXNER 22. ORNSTEIN. 23. PIERNIK. 24. RAD. 25. KALUZIENSKI
 26. LEITCH. 27. THIEBAUD. 28. THOMPSON. 29. THRIFT. 30. PINION
 31. WALTERS. 32. P. WARD. 33. J.H.WARD. 34. WATERS. 35. TEMES

JOB ID LIST? YES=1,NO=0

1

1. R0680. 2. R0637. 3. R0638. 4. R0614. 5. R0677
 6. R0615. 7. R0644. 8. R0643. 9. R0640. 10. R0681
 11. R0641. 12. R0000. 13. R0645

END OF EXECUTION

CPU TIME: 5.40 ELAPSED TIME: 3:29.58

EXIT

Fig. 2(Continued) — Sample output format of program BRANCH.FOR

Next there is a table preceded by the heading "JOB SURPLUS". This is a listing of projected surplus or deficit by job number, as stored in the file SUR.DAT by the individual project runs of MANAGE.FOR. This table is followed by the algebraic sum, indicating whether there is a projected net surplus or deficit for the Branch as a whole. This has to be weighed against any time deficit in assigned personnel, as mentioned above.

The next table in the readout associates each personnel identification number with a person in the Branch, by name.

Finally, a table is given showing the computer-program job numbers in terms of NRL project numbers.

A listing of the program is given in the Appendix.

Reference

1. C. L. Temes, "A User-Oriented Management Program for Project Monitoring on a Time-Share Computer Terminal", NRL Memorandum Report 3706, January 1978.

APPENDIX

Listing of BRANCH.FOR

TYPE BRANCH.FOR

```

00100      DIMENSION W(35),PS(35)
00200      DIMENSION T(40,20)
00210      DIMENSION S(20)
00300      DIMENSION IND(10)
00400      DO 100 I=1,35
00500 100  W(I)=1.
00600      W(1)=0.; W(18)=0.; W(25)=.75
00700      W(26)=0.; W(35)=.2; W(2)=0.
00710      W(9)=0.; W(5)=0.; W(15)=0.; W(30)=0.
00720      W(14)=0.
00800      OPEN(UNIT=21,DEVICE='DSK',FILE='PSAL.DAT',ACCESS='SEQIN')
00900      READ(21,1) (PS(I),I=1,35)
01000 1    FORMAT(35F5.0)
01100      CLOSE(UNIT=21,DEVICE='DSK',FILE='PSAL.DAT')
01200      SUMR=0.
01210      SUMW=0.
01300      DO 110 I=1,35
01310      SUMW=SUMW+W(I)
01400 110  SUMR=SUMR+W(I)*PS(I)
01500      R=SUMR*45/12
01600      WRITE(5,3)
01700 3    FORMAT(1X,'INPUT: BALANCE')
01800      ACCEPT*.BAL
01900      WRITE(5,4)
02000 4    FORMAT(/1X,'INPUT: NO. OF MONTHS REMAINING')
02100      ACCEPT*.FM
02200      USE=R*FM
02300      SUR=BAL-USE
02400      WRITE(5,5) BAL,USE
02500 5    FORMAT(/1X,'CURRENT BALANCE='*F10.0//1X,'AMT.
02600 1    NEEDED FOR STAFF='*F10.0)
02700      WRITE(5,7) SUR
02800 7    FORMAT(/1X,'SURPLUS='*F10.0)
02900      OPEN(UNIT=21,DEVICE='DSK',FILE='TIME.DAT',ACCESS='SEQIN')
03000      READ(21,8) ((T(I,J),J=1,20),I=1,40)
03100 8    FORMAT(800F4.2)
03200      CLOSE(UNIT=21,DEVICE='DSK',FILE='TIME.DAT')
03300      FSUM=0.
03400      DO 120 I=1,39
03500      SUMT=0.
03600      DO 120 J=1,19
03700      SUMT=SUMT+T(I,J)
03800 120  T(I,20)=SUMT
03900      WRITE(5,9)
04000 9    FORMAT(/2X,'MAN'*5X,'FRACT. ')
04100      DO 210 K=1,4
04200      DO 410 L=1,10
04300 410  IND(L)=L+(K-1)*10
04400      WRITE(5,31) (IND(I),I=1,10)
04500 31  FORMAT(/1X,10(12,4X))
04600      WRITE(5,32) (T(IND(I),20),I=1,10)
04700 32  FORMAT(1X,10(F4.2,2X))
04800 210 CONTINUE

```



```

04900      DO 130 I=1,40
05000      FSUM=FSUM+T(I,20)
05100      130 CONTINUE
05200      WRITE(5,21) FSUM,SUMM
05300      21 FORMAT(//1X,'SUM='F6.2,5X,'SUM SHOULD BE='F6.2,' PLUS
05310      1 PERSONNEL OUTSIDE BRANCH')
05400      WRITE(5,13)
05500      13 FORMAT(//1X,'PRINT BREAKDOWN? YES=1,NO=0')
05600      ACCEPT=, IANS
05700      IF(IANS.EQ.1) CALL PRINT(T)
05800      WRITE(5,15)
05900      15 FORMAT(//1X,'SURPLUS LIST? YES=1,NO=0')
06000      ACCEPT=, IANS
06100      IF(IANS.EQ.0) GO TO 140
06110      WRITE(5,61)
06120      61 FORMAT(///1X,'JOB',4X,'SURPLUS')
06130      OPEN(UNIT=21,DEVICE='DSK',FILE='SUR.DAT',ACCESS='SEQIN')
06140      READ(21,71) (S(I),I=1,20)
06150      71 FORMAT(20F9.0)
06200      DO 150 K=1,4
06300      DO 151 L=1,5
06400      151 IND(L)=L+(K-1)*5
06500      WRITE(5,41) (IND(I),I=1,5)
06600      41 FORMAT(//1X,5(12,9X))
06700      WRITE(5,42) (S(IND(I)),I=1,5)
06800      42 FORMAT(1X,5(F8.0,3X))
06900      150 CONTINUE
07000      140 CONTINUE
07001      SUM=0.
07002      DO 300 I=1,20
07003      300 SUM=SUM+S(I)
07004      WRITE(5,52) SUM
07005      52 FORMAT(//1X,'SUM='F10.0/)
07010      CLOSE(UNIT=21,DEVICE='DSK',FILE='SUR.DAT')
07100      WRITE(5,11)
07200      11 FORMAT(//1X,'STAFF ID LIST? YES=1,NO=0')
07300      ACCEPT=, IANS
07400      IF(IANS.EQ.1) CALL STAFF
07500      WRITE(5,12)
07600      12 FORMAT(//1X,'JOB ID LIST? YES=1,NO=0')
07700      ACCEPT=, IANS
07800      IF(IANS.EQ.1) CALL JOBS
07900      END
08000      SUBROUTINE PRINT(T)
08100      DIMENSION T(40,20)
08200      WRITE(5,2)
08300      2 FORMAT(//2X,'MAN',3X,'JOB',3X,'FRACT,')
08400      DO 100 I=1,40
08500      DO 100 J=1,19
08600      IF(T(I,J).GT.0.) WRITE(5,1) I,J,T(I,J)
08700      1 FORMAT(1X,14,3X,14,3X,F4.2)
08800      100 CONTINUE

```

```

08900      RETURN
09000      END
09100      SUBROUTINE STAFF
09200      WRITE(5,1)
09300      1  FORMAT(/1X,/1. ADAMS, 2. TITUS, 3. BARRY, 4. BORCHARDT
09400      1 5. BRINSON//1X,/6. J.L.WARD, 7. CRISLER, 8. CROSS, 9. HSIAO
09500      2 10. GOTT//1X,/11. HAILEY, 12. HARPER, 13. HOWARD
09600      3 14. XXXXXX, 15. XXXXXXXX//1X,/16. LINDE, 17. LIPKA
09700      4 18. MARINDS, 19. MAYS, 20. MEADS//1X,/21. MEIXNER
09800      5 22. ORNSTEIN, 23. PIERNIK, 24. RAD, 25. KALUZIENSKI//1X,/26.
09900      6 LEITCH, 27. THIEBAUD, 28. THOMPSON, 29. THRIFT,
10000      7 30. PINION//1X,/31. WALTERS, 32. P. WARD, 33. J.H.WARD,
10100      8 34. WATERS, 35. TEMES/)
10200      RETURN
10300      END
10400      SUBROUTINE JOBS
10500      WRITE(5,1)
10600      1  FORMAT(/1X,/1. R0680, 2. R0637, 3. R0638, 4. R0614,
10700      1 5. R0677//1X,/6. R0615, 7. R0644, 8. R0643, 9. R0640,
10800      2 10. R0681//1X,/11. R0641, 12. R0000, 13. R0645/)
10900      RETURN
11000      END
11100

```